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Amendment and/or Response
Reply to non-final Office action of 18 September 2008

Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A computer program product having program code encoded in a computer readable medium for execution by ~~An~~ an image processing system comprising a visualization device, said code comprising 3D image data processing ~~means (10) of~~ code for automatically ~~automatic~~ mapping a [[3-D]] 3D Surface Model onto the surface of an object of interest in a [[3-D]] 3D image, for estimating a model-based [[3-D]] 3D segmentation surface, ~~comprising visualizing means (60)~~ and further comprising:

~~means of~~ interactive adaptation ~~(20) of~~ code for interactively adapting the segmentation surface to the actual surface of the object of interest including:

~~means of~~ interactive selection ~~(40) of~~ code for interactively selecting a 2D ~~data-plane~~ Data Plane (DP) that intersects the [[3-D]] 3D segmentation surface along a [[2-D]] 2D Model Curve (MC), said 2D Data Plane having a user-selected orientation with respect to said surface, which is appropriate for the user to visualize a [[2-D]] 2D portion called Aberrant Curve (AC) of said Model Curve to be modified;

~~means of~~ interactive definition code for interactively defining ~~of~~ a Guiding Curve (GC) in the [[2-D]] 2D Data Plane;

~~means of interactive adaptation~~ code for interactively adapting ~~of~~ said Aberrant Curve (AC) to said Guiding Curve (GC); and

~~means of~~ code for further automatically adapting the 3D segmentation surface within a neighborhood of the interactively adapted Aberrant Curve.

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2.   (Currently amended) The ~~system~~ computer program product of Claim 1, having user-controlled drawing ~~means~~ code to define a User Curve (UC), User Points including end points on the User Curve for the processing system to draw the Guiding Curve (GC) through the User Points between the end points and for the interactive adaptation ~~means (20)~~ code to adapt the Aberrant Curve (AC) to said Guiding Curve (GC).

3.   (Currently amended) The ~~system~~ computer program product of Claim 2, wherein the interactive adaptation ~~means (20)~~ code has processing ~~means~~ code to calculate intersection points (MEP) of the segmentation surface with the Data Plane (DP), and user-actuated selection ~~means~~ code to select particular intersection points as end points of the Aberrant Curve (AC) and intersections points, called Aberrant Points (AP) located on the Aberrant Curve between said end points.

4.   (Currently amended) The ~~system~~ computer program product of Claim 3, wherein the interactive adaptation ~~means (20)~~ code has processing ~~means~~ code to calculate Guiding Points located on the Guiding Curve corresponding to the Aberrant points on the Aberrant Curve.

5.   (Currently amended) The ~~system~~ computer program product of Claim 4, wherein the interactive adaptation ~~means (20)~~ code has processing ~~means~~ code to define motion vectors between Aberrant points on the Aberrant Curve and corresponding Guiding Points on the Guiding Curve for locally mapping the Aberrant Curve onto the Guiding Curve using said motion vectors.

6. (Currently amended) The ~~system~~ computer program product of Claim 5, wherein the interactive adaptation ~~means (20)~~ code has processing ~~means~~ code for iterative adaptation of the region around the Aberrant Curve onto a region around the Guiding Curve, with evolution of weighting factor in function of iteration steps.

7. (Currently amended) The ~~system~~ computer program product of claim 1, wherein the Surface model is a Mesh model.

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8. (Currently amended) The ~~system~~ computer program product of Claim 7, comprising:

~~Acquisition means~~ acquisition code for acquiring a three-dimensional image of an object of interest to be segmented,

~~Automatic~~ automatic segmentation ~~means (10)~~ code for generating a Mesh Model, formed of polygonal faces with common edges and nodes and automatically deforming the Mesh Model in order to map said Mesh Model onto said object of interest for yielding the segmentation surface;

wherein the Interactive adaptation ~~means (20)~~ code has code for interactively adapting said Mesh Model in order to locally modify regions of the Mesh Model, wherein the intersection points of the Model Surface on the Aberrant Curve are intersection points of face edges, called Mesh edge Points, with the Data Plane; the motion vectors are defined between said Mesh Edge Points and corresponding Guiding Points of the Guiding Curve; and the motion vectors are used to modify the face nodes around said Mesh Edge Points to provide adapted points around the Guiding Curve.

9. (Currently amended) The ~~system~~ computer program product of Claim 7, wherein the interactive adaptation ~~means (20)~~ code has iterative processing ~~means~~ code for iterative adaptation of the region around the Aberrant Curve onto a region around the Guiding Curve, with evolution of internal forces in function of iteration steps.

10. (Currently amended) The ~~system~~ computer program product of claim 7, wherein the interactive adaptation ~~means (20)~~ code has iterative processing ~~means~~ code for iterative adaptation of the region around the Aberrant Curve onto a region around the Guiding Curve, with evolution of resolution in function of iteration steps.

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11. (Currently amended) The ~~image processing system~~ computer program product of claim 1, further comprising ~~means~~ code for:

~~Taking~~ taking a decision to stop the process of interactive adaptation or automatic segmentation of the Surface Model onto the object of reference in function of a predetermined fitness level.

12. (Currently amended) The ~~system~~ computer program product of claim 1, having display ~~means~~ code to display 3D views of the segmentation surface, 3D and/or 2D views of the Data Plane, 3D and/or 2D views of the data plane intersection, called Model Curve (MC), with the segmentation surface, with or without highlighting said Model Curve (MC), said views being displayed one at a time or several at a time.

13. (Currently amended) The computer program product of claim 1, wherein the image processing system is [[A]] a medical imaging system comprising a suitably programmed computer or a special purpose processor ~~having circuit means~~, which ~~are~~ is arranged to ~~form an image processing system as claimed in claim 1 to~~ process medical image data[[;]].

14. (Currently amended) The computer program product of claim 1, wherein the image processing system is [[A]] a medical examination imaging apparatus, ~~having~~ further comprising:

~~Means~~ code to acquire a three-dimensional image of an organ of a body ~~; and~~

~~a system according to claim 1~~.

15. (Cancelled)